

**ADDENDUM 1
TO THE CONTRACT PROVISIONS AND CONTRACT PLANS**

FOR

**CITY OF WOODLAND
WATER TREATMENT PLANT HVAC AND ELECTRICAL IMPROVEMENTS**

G&O #16238

ISSUED THIS DATE: FRIDAY, AUGUST 10, 2018

**BID OPENING: 1:00 P.M. (LOCAL TIME) ON
TUESDAY, AUGUST 21, 2018
CITY OF WOODLAND
230 DAVIDSON AVENUE
WOODLAND, WASHINGTON, 98674**



Bidder shall acknowledge receipt of this Addendum on Page P-4 of the Proposal.

TO PROSPECTIVE BIDDERS:

The attention of all prospective bidders on the above project is directed to the following additions and modifications to the Contract Provisions and Contract Plans.

**I. ADDITIONS, MODIFICATIONS, AND/OR DELETIONS TO THE
TECHNICAL SPECIFICATIONS**

ITEM NO. 1:

Page i, Technical Specifications – Table of Contents

Under Division 13, Special Construction, **ADD** the following new specification section:

“13417	Pressure Gauges	13417-1
13419	Pressure Transmitters	13419-1”

ITEM NO. 2:

Page i, Technical Specifications – Table of Contents

Under Division 15, Mechanical, **ADD** the following new specification section:

“15050	Piping Systems	15050-1”
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ITEM NO. 3:

Page 01200-3, Specification Section 01200-1.4 B. 1. b., Payment

REVISE the first sentence of the first paragraph as shown below (added text is italicized, deleted text is shown as strike out):

“Payment: The lump sum contract price for VALVE AND VALVE OPERATOR REPLACEMENT shall include costs for the labor, materials, and equipment required to replace the *solenoid valves and brackets on filter wastegates*, valves, and valve operators, as shown on the Plans and as specified herein, including removal and wastehaul of the existing *solenoid valves and brackets*, motor operated valves, and valve operators.”

ITEM NO. 4:

Page 01200-3, Specification Section 01200-1.4 B. 2., Solenoid Valve Replacement

DELETE this section entirely.

ITEM NO. 5:

ADD the attached New Specification Section 13417 – Pressure Gauges.

ITEM NO. 6:

ADD the attached New Specification Section 13419 – Pressure Transmitters.

ITEM NO. 7:

ADD the attached New Specification Section 15050 – Piping Systems.

ITEM NO. 8:

Page 15100-1, Specification Section 15100-2.1, Butterfly Valves

REVISE the first sentence of the first paragraph as shown below (added text is italicized, deleted text is shown as strike out):

“Butterfly valves for liquid service shall have iron body and disc, Buna N seats attached to the valve body *or valve disc*, stainless steel shaft, corrosion resistant bearings, and ~~flanged~~ *wafer* style body and shall comply with AWWA C504.”

ITEM NO. 9:

Page 15100-3, Specification Section 15100-3.2, Control Valve

DELETE the first paragraph in its entirety and **REPLACE** with the following:

“The services of a factory-trained representative of the control valves and actuators manufacturer shall be provided. Services shall include 2 days (two visits) onsite for the supervision of equipment startup, testing and instruction of the City’s personnel in the operation and maintenance of the

equipment, as well as two follow-up visits. One trip (1 day) shall be for installation inspection, certification and testing; and one trip (2 days) shall be for startup, training and performance testing. Instruction and training of the Owner's personnel shall not take place until startup is completed and the system is fully operational and shall be at a time and location agreed to by the Owner. The cost of these services shall be included in the bid price."

ITEM NO. 10:

Page 15110-9, Specification Section 15100-3.2, Manufacturer's Services

REVISE the first sentence of the first paragraph as shown below (added text is italicized, deleted text is shown as strike out):

"The services of a factory-trained representative of the *control valves* and actuators manufacturer shall be provided."

ITEM NO. 11:

Page 16940-13, Specification Section 16940-2.3, CONTROL PANEL CONTROL DEVICES

ADD the following new section:

"E. ROUTER

Router shall be Red Lion RAM 6021, 24 VDC, or exact equivalent."

II. ADDITIONS, MODIFICATIONS, AND/OR DELETIONS TO THE CONTRACT PLANS

ITEM NO. 1:

SHEET H-1, HVAC SCHEDULES

ADD the following to the REMARKS column of the HEAT PUMP SCHEDULE for 01 FC 01:

"Locate 01 FC 01 above the header of the south wall office window."

ITEM NO. 2:

SHEET H-2, HVAC DEMO

ADD the following to the end of DEMO NOTE #1:

"Contractor shall provide and install a galvanized steel panel cut to fit into the exterior grill framework of the existing heat pump intake. Install with stainless sheet metal screws, seal all around perimeter of new panel with paintable caulking and paint new panel to match building color. Interior wall shall be insulated and patched to match existing interior wall section."

ITEM NO. 3:

SHEET ED-2, ELECTRICAL DETAILS

On Detail 1, Convenience Receptacle Construction Detail Reference Table
REVISE as shown below (added text is italicized, deleted text is shown as strike out):

OFFICE/LAB	TYPE F1	E-7
<i>OFFICE/LAB SINK</i>	<i>TYPE F2</i>	<i>E-7</i>
RESTROOM	TYPE F2	E-7

ITEM NO. 4:

SHEET E-27, ANALOG LOOP DIAGRAMS

On Details 1-3, delete the word “air” from “header air pressure” near the PLC tables.

SECTION 13417**PRESSURE GAUGES****PART 1 GENERAL****1.1 SCOPE**

The work specified in this Section includes furnishing and installing pressure gauges, as shown on the Plans and specified herein. Pressure gauges shall include all necessary connectors and hardware at the various locations for a complete and workable installation.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01200	Measurement and Payment
01300	Submittals
Division 15	Mechanical

1.3 EQUIPMENT LIST

Equipment numbers are as follows:

<u>Item</u>	<u>Equipment Number</u>
Pressure Gauge Installed with Pressure Transducer 01 PT 211	01 PG 211
Pressure Gauge Installed with Pressure Transducer 01 PT 212	01 PG 212
Pressure Gauge Installed with Pressure Transducer 01 PT 221	01 PG 221
Pressure Gauge Installed with Pressure Transducer 01 PT 222	01 PG 222
Pressure Gauge Installed with Pressure Transducer 01 PT 231	01 PG 231
Pressure Gauge Installed with Pressure Transducer 01 PT 232	01 PG 232

1.4 PERFORMANCE REQUIREMENTS

Unless otherwise indicated, the discharge pressure gauge scales shall be selected so that the normal operating pressure falls between 50 and 80 percent of full scale.

Pressure gauges shall be shown on the detailed installation drawings of all piping and connected equipment as specified in Section 15050. Pressure scale range for each pressure gauge shall be in the form of a summary table including all process piping pressure gauges.

1.5 DELIVERY, STORAGE AND HANDLING

All equipment shall be completely factory assembled, skid mounted, crated and delivered to protect against damage during shipment.

All equipment delivered to the site shall be stored as specified in accordance with the manufacturer's instructions.

1.6 WARRANTY

In addition to the warranty required in the General Conditions, the equipment manufacturer shall provide an extended warranty covering defects in material and workmanship for 2 years following the date of substantial completion. The warranty shall be in printed form, shall apply to all similar units, and shall include parts and labor.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURERS

The pressure gauges shall be Ashcroft Duragage 1279, or approved equal.

The pressure gauges shall read between 0-15 psi.

The diaphragm seals shall be Ashcroft Type 101, or approved equal.

2.2 GENERAL

The pressure gauges shall be glycerin filled type and shall have all internal parts immersed. Pressure gauges shall be minimum 4 1/2-inch dial size, with non-metallic case, stainless steel bourdon tube with plastic bushings and pinion, and stainless steel selector. Gauges shall be ANSI grade A or better with an accuracy of ± 0.5 percent.

Gauges measuring liquids shall be supplied with bronze pressure snubber and diaphragm seal. Diaphragm seals shall have silicone DC200 fluid fill and shall have a Type 316 stainless steel body, with 1/4-inch flushing connection and 1/2-inch process connection.

2.3 SPARE PARTS

The Contractor shall provide the manufacturer's recommended spare parts and special tools. All parts and tools shall be suitably identified and effectively protected from moisture and corrosion with appropriate wrappings or coatings or a combination thereof. All parts and tools shall be furnished in sturdy labeled

boxes. At a minimum these shall include all special tools and appliances necessary to service, repair, and adjust the equipment.

2.4 FACTORY TESTING

The equipment shall be fully tested at the manufacturer's plant before shipment. Tests shall insure that the equipment will operate as desired under anticipated field conditions. Certified copies of test report(s) shall be submitted to the Engineer prior to shipment.

PART 3 EXECUTION

3.1 INSTALLATION

The pressure gauges and accessories shall be installed as shown on the Plans and as specified herein and in accordance with the manufacturer's instructions.

3.3 FIELD TESTING

The Contractor shall perform the field testing described in Section 01800.

The field test shall insure that the equipment will operate as desired under field conditions. The manufacturer shall provide a formal test procedure and report forms for recording data. The Contractor shall submit the report forms to the Engineer prior to operational testing.

Any defects in the equipment or failure to meet requirements of the Specification shall be promptly corrected by the Contractor.

3.4 MANUFACTURER'S SERVICES

The services of a factory-trained representative of the pressure gauge manufacturer shall be provided. Services shall include a minimum of 1 day onsite. Services shall include inspection of the installation, initial configuration, programming, startup, and adjustments and instruction of the Owner's personnel in operation and maintenance. Instruction and training of the Owner's personnel shall not take place until startup is completed and the pressure gauges are fully operational and shall be at a time and location agreed to by the Owner. The cost of these services shall be included in the bid price.

***** END OF SECTION *****

SECTION 13419

PRESSURE TRANSMITTERS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes furnishing and installing a gauge pressure transmitter as specified herein and as shown on the Plans. The pressure transmitter shall be complete with all necessary accessories and hardware for a complete and workable installation.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01200	Measurement and Payment
01300	Submittals
01800	Testing, Commissioning, and Training
Division 16	Electrical

1.3 EQUIPMENT LIST

Equipment number is as follows:

<u>Item</u>	<u>Equipment Number</u>
Pressure Transducer, Influent, Filter 1	01 PT 211
Pressure Transducer, Effluent, Filter 1	01 PT 212
Pressure Transducer, Influent, Filter 2	01 PT 221
Pressure Transducer, Effluent, Filter 2	01 PT 222
Pressure Transducer, Influent, Filter 3	01 PT 231
Pressure Transducer, Effluent, Filter 3	01 PT 232

1.4 PERFORMANCE REQUIREMENTS

The pressure transmitter shall be provided with the following pressure range for the specified applications and locations.

Parameter	Value
Reference Accuracy (percent of span)	0.065%
Long Term Stability (2 year max, percent)	0.1% of URL
Span Drift (percent)	None measurable
Turndown Capacity	100:1
Total Response Time	100 ms
Pressure Range	0 – 15 psig

Parameter	Value
Measurement Media	Water
Maximum Media Temperature	60°F

If the manufacturer's rated maximum process temperature in the measuring cell is less than the Maximum Media Temperature listed above, the Contractor shall provide a process connection pipe/hose of sufficient length to provide ambient cooling so that the maximum measuring cell temperature is not exceeded.

1.5 WARRANTY

In addition to the warranty required in the General Conditions, the equipment manufacturer shall provide an extended warranty covering defects in material and workmanship for 2 years following the date of substantial completion. The warranty shall be in printed form, shall apply to all similar units, and shall include parts and labor.

1.6 DELIVERY, STORAGE AND HANDLING

All equipment shall be completely factory assembled, crated and delivered to protect against damage during shipment.

All equipment delivered to the site shall be stored as specified in accordance with the manufacturer's instructions.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURERS

The pressure transmitter shall be Emerson Rosemount Model 2051T, Siemens SITRANS P DS III, or Endress and Hauser Deltabar S PMD75, with a block and bleed valve manifold provided. No other manufacturers or models shall be accepted.

2.2 PRESSURE TRANSMITTER

The pressure transmitter shall be a digital transmitter with piezoresistive or capacitance-based sensor and Type 316 stainless steel diaphragm seal. The pressure sensitive element shall be Type 316 stainless steel, silicone oil filled, and shall be calibrated for the range as specified in the Performance Requirements.

The transmitter pressure sensor shall be protected from the effects of pressure swings and spikes up to the maximum working pressure (body rating) of the pressure capsule. The process connection shall be Type 316 stainless steel, 1/2-inch diameter, NPT 14 thread. The process connection shall be connected to

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a Type 316 stainless steel block-and-bleed manifold with a Type 316 stainless steel isolation valve and a bleed vent. The manifold shall permit removal of the sensor for maintenance or replacement with minimal leakage of process air during compression removal of the sensor.

The transmitter shall be a true two-wire loop-powered device, 24 VDC, without the requirement of a separate power supply at the transmitter. The unit shall be modular plug-in design.

The non-wetted transmitter housing shall be aluminum or stainless steel and shall meet NEMA 4X standards. The pressure transmitters shall display the measured pressure on the front of the unit enclosure and all units shall have a menu-driven keyboard on the front panel of the transmitter. The transmitter shall have an LCD display for indicating the pressure in real engineering units (psig). The display shall be rotatable in 90 degree increments. The unit shall be capable of recalibration in the field by the menu-driven keyboard. The keyboard shall allow for viewing control of results, the error messages, the operating modes, and the digital display.

The controller shall be supplied with one isolated 0/4-20 mA standard DC (direct current) analog output; with 0.004 mA (12-bit) resolution and capability to drive up to 500 Ω loads.

The digital information shall be evaluated in the microcontroller, its linearity and temperature response corrected and converted in a digital-to-analog converter into an analog output current.

The transmitter shall have the ability to electronically compensate for the effects of mounting position on the sensor. Furthermore, the transmitter shall be able to force the loop current to various values to aid in loop setup and testing.

The transmitter shall have online diagnostics and registers to detect and store various parameters such as min/max electronics temperature, min/max pressure, capsule temperature, and min/max process pressure to help diagnose process problems. The transmitter shall also have dual timer registers that allow the transmitter to signal when a settable time has elapsed for preventative maintenance or calibration.

Analog instruments shall operate without loss of loop accuracy due to electromagnetic interference, resistive or inductive losses or similar problems related to field interconnection of components when connected with shielded copper wire in the manner shown on the Plans.

The pressure transmitters shall be listed and labeled by an electrical testing laboratory recognized by the Washington State Department of Labor and

Industries or be acceptable to the Washington State Department of Labor and Industries for installation on this project.

2.3 SPARE PARTS

The manufacturer shall provide the manufacturer's recommended spare parts and special tools. All spare parts and tools shall be suitably identified and effectively protected from moisture and corrosion with appropriate wrappings or coatings or a combination thereof. All parts shall be furnished in sturdy labeled boxes.

2.4 FACTORY TESTING

The equipment shall be fully tested at the manufacturer's factory before shipment. Tests shall insure that the equipment will operate as desired under anticipated field conditions. Certified copies of test report(s) shall be submitted to the Engineer prior to shipment.

PART 3 EXECUTION

3.1 INSTALLATION

The pressure transmitters shall be installed at the locations shown on the Plans in accordance with manufacturer's recommendations.

All mounting hardware and supports shall be provided by the Contractor.

If the manufacturer's rated maximum process temperature in the measuring cell is less than the Maximum Media Temperature listed in Part 1.4, the Contractor shall provide a process connection pipe/hose of sufficient length to provide ambient cooling so that the maximum measuring cell temperature is not exceeded.

3.2 FIELD TESTING

The Contractor shall perform the field testing described in Section 01800.

The field test shall insure that the equipment will operate as desired under field conditions. The manufacturer shall provide a formal test procedure and report forms for recording data. The Contractor shall submit the report forms to the Engineer prior to operational testing.

Any defects in the equipment or failure to meet requirements of the Specification shall be promptly corrected by the Contractor.

3.3 MANUFACTURER'S SERVICES

The services of a factory-trained representative of the pressure transmitter manufacturer shall be provided. Services shall include a minimum of 1 day on site. Services shall include inspection and supervision of installation, initial configuration, programming, startup, and adjustments and instruction of the Owner's personnel in operation and maintenance for the pressure transmitters. Instruction and training of the Owner's personnel shall not take place until startup is complete and the pressure transmitters are fully operational and shall be at a time and location agreed to by the Owner. The cost of these services shall be included in the bid price.

***** END OF SECTION *****

SECTION 15050

PIPING SYSTEMS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section describes process and utility piping, fittings, supports, and accessories shown on the Plans, described in these Specifications and as required to completely interconnect all equipment with piping for complete and operable systems inside of buildings and vaults.

The Contractor shall direct the attention of all subcontractors and suppliers of piping systems and related appurtenances for the work to the applicable provisions in the Contract Documents wherever they may occur.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01200	Measurement and Payment
01300	Submittals
01800	Testing, Commissioning and Training
Division 15	Mechanical
Division 16	Electrical

1.3 STANDARDS FOR THE WORK

Pipe, fittings, and supports shall be provided to produce complete, operable systems with all elements properly interconnected as shown in schematic diagrams or to provide specified operations. If a specific dimensioned location is not shown for interconnections or smaller system elements, the Contractor shall select appropriate locations and show them on Shop Drawing submittals for review.

Piping systems and materials shall be new and without imperfections and shall be erected in a neat and workmanlike manner; aligned, leveled, cleaned and adjusted for satisfactory operation; installed in accordance with the best standard practices for this type of work so that connecting and disconnecting of piping and accessories can be readily made and so that all parts are easily accessible for inspection, operation, maintenance and repair. In order to meet these requirements minor deviation from the Plans may be made as approved by the Engineer.

1.4 SUBMITTALS

Submittal data shall be supplied in accordance with Section 01300.

Detailed installation drawings of all piping and connected equipment shall be submitted. The drawings shall include all piping, valves, fittings, pipe support locations and types, seismic bracing, and appurtenances.

Submit data to show that the following items conform to the Specification requirements:

- A. Pipe, fittings, and accessories.
- B. Valves.
- C. Couplings and couplers.
- D. Pipe supports and seismic braces as required herein.

Submit certified test reports as required herein and by the referenced standards.

PART 2 PRODUCTS

2.1 GENERAL

Pipe sizes are nominal inside diameter unless otherwise noted.

All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class and other appropriate data such as thickness for piping.

Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the complete product. Acceptance of installed piping systems shall be based on inspection and leakage tests as specified in Part 3 Execution of this Section.

All water piping shall be certified under NSF 61 and NSF 372 for potable water use.

2.2 DUCTILE IRON PIPE AND FITTINGS

A. GENERAL

Ductile iron pipe shall be centrifugal cast pipe conforming to AWWA C151, Class 52, unless otherwise noted, bituminous coated and cement mortar lined in accordance with, AWWA C104. All flanged spools shall be Class 53 as shall all piping where grooved couplings are used.

Fittings shall be ductile iron and shall comply with AWWA C110 or AWWA C153, bituminous-coated exterior and cement mortar lined, 250-psi minimum pressure. Fittings shall be flanged. Fittings shall not be "Tyton" or other push-on type joint.

2.3 MISCELLANEOUS FITTINGS

A. ADAPTER FLANGES

Adapter flanges for ductile iron pipe shall be manufactured of high strength ductile iron, ASTM A536, Grade 65-45-12. Flange dimensions shall be in accordance with ANSI B16.1, 125-lb. pattern. Gasket shall be Buna-N. Setscrews shall be AISI 4140, high strength, low alloy steel. The adapter flanges shall be Uni-Flange Series 400, or equal.

PART 3 EXECUTION

3.1 PIPING INSTALLATION

A. GENERAL HANDLING AND PLACING

All piping constructed on this project shall be performed in accordance with the Uniform Plumbing Code. These Plans do not detail all items such as complete venting, etc.; however, it is understood that this work shall be included as a part of this Section and all costs included in the various prices bid.

Pipe and accessories shall be handled in such a manner as to insure delivery on site in sound, undamaged condition. Particular care taken not to injure pipe coating. No other pipe or material of any kind shall be placed inside of lined pipe or fitting after lining has been applied. All pipe and fittings shall be unloaded, stored, handled in such a manner as to insure against damage. Dropping of pipe or fittings shall be cause for rejection.

The types and sizes of pipes to be used shall be as specified herein and as shown on the Plans. Where sizes of small pipe are omitted from the plans and not mentioned in the Specifications, the sizes to be used shall correspond to plumbing code requirements. In any event, undesignated pipe sizes shall be proper for the function to be performed and as accepted by the Engineer.

All pipe shall be carefully placed and supported at the proper lines and grades and where possible shall be sloped to permit complete drainage. Piping runs shown on the Plans shall be followed as closely as possible,

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except for minor adjustments to avoid architectural and structural features. If major relocations are required, they shall be approved by the Engineer.

Unions shall be installed in all threaded joint piping to facilitate the removal of sections for maintenance and repair in accordance with the best trade practice. Unions shall be ground joint, malleable iron type. Where unions connect dissimilar materials, the union shall be protected from reaction with dissimilar metals by installation of insulating materials and dielectric unions at contact points.

The interior of all piping shall be cleaned after assembly and before connecting to equipment.

All piping for which no location dimensions are shown shall be installed in a neat and workmanlike manner in accordance with best trade practice. Wherever possible runs and rises shall be grouped and kept parallel. Properly lay out all miscellaneous piping to clear obstructions such as passageways, equipment, larger sized pipes, ventilation ducts, lights, etc.

Whenever pipe requires field cutting to fit in line, work shall be done by a machine in a satisfactory manner so as to leave a smooth end at right angles to axis of pipe.

All pipe shall be installed in strict accordance with manufacturer's recommendations and/or specifications, and best commercial trade practice. Any special tools required for laying, jointing, cutting, etc., shall be supplied and properly used. All pipe shall be kept thoroughly clean until acceptance of completed work, and shall conform accurately to lines and grades given. At all times during pipe laying operations keep trench free of water either by pumping, bailing, or drainage. Seal end of line with a tight-fitting plug when pipe is not being laid.

Valves shall have interiors cleaned of all foreign matter and inspected, both in open and closed positions prior to installation.

All pipes running through concrete walls below water surface or where subject to groundwater pressure shall be assembled as shown on the plans. Pipes running through concrete not subject to water pressure may be installed through standard steel sleeves, one or two pipe sizes larger than pipe in question. The pipe shall be free of all dirt and grease and thoroughly cleaned to insure a tight bond with the concrete.

All above ground outside pipe carrying liquids shall be insulated.

All buried, submerged, or intermittently submerged piping that is bolted together or uses bolts to hold materials together shall use 316 stainless steel nuts, bolts, and washers. This requirement applies to a distance of 12 inches above the highest water level in any tank, channel, or structure. Otherwise, bolts, nuts, and washers may be hot-dip galvanized steel.

3.2 FLANGED PIPING

Flanged joints shall be made in accordance with best trade practice. Screwed flanges for piping shall be run until pipe projects beyond face and no more than one thread is exposed on backside. All flange faces shall then be machined so as to be perfectly parallel. All flanged pipe shall be accurately dimensioned; no "drawing-up" will be allowed. Gaskets shall be full face, rubber.

3.3 TESTING

A. GENERAL

All piping shall be tested and inspected in accordance with the provisions of Division 7 WSDOT standard specifications, except as modified herein. Where new piping systems are being connected to existing piping systems the existing piping systems shall be tested prior to connecting to the new pipe to the existing piping. Once the new piping system has been connected to the existing piping system the entire system shall be tested again.

All piping systems will be tested to demonstrate leak tightness prior to acceptance. The Contractor shall provide all equipment and labor necessary to perform all testing required herein, the costs to be included in the lump sum bid price.

Each particular piping system shall be tested as hereinafter specified. All leaks shall be repaired or defective material replaced and the test repeated as directed by the Engineer. After compliance with test requirements and approval of the Engineer, the field painting, where required, may be started. All pressure testing shall be done prior to any finish painting or pipe insulating.

The Contractor shall be responsible for repair of any damage resulting from or caused by leak testing.

All thrust blocks shall be in place for at least 7 days to allow concrete to cure before testing. Install adequate blocking or other means of resisting test pressure.

B. DISINFECTION

Before being placed into service, all new and modified potable water pipe and appurtenances shall be sterilized and a satisfactory bacteriological report obtained in accordance with Section 7-11.3(12) of the WSDOT Standard Specifications.

As each pipe is laid, sufficient high-test dry calcium Hypochlorite (65 to 70 percent chlorine) shall be placed in the pipe to yield a dosage of not less than 50 mg/l available chlorine, calculated on the volume of water which the pipe and appurtenances will contain. Minimum free chlorine residual after 24 hours shall be 25 mg/l.

During the process of sterilizing, all valves, hydrants, and/or other appurtenances shall be operated to insure complete contact. All closure fittings shall be swabbed with a very strong chlorine solution at least as strong as liquid household bleach (5 to 6 percent chlorine).

Following chlorination, all pipe shall be flushed to remove any solids until a test shows no more than 0.2 parts per million available chlorine. If no hydrant is installed at the end of the main, then a tap shall be provided large enough to develop a velocity of at least 2.5 FPS in the main.

Before placing the lines into service, a satisfactory report shall be received from the local or state health department on samples collected from representative points in the new pipe after the 24-hour sterilization period has elapsed. Samples for bacteriological tests in the presence of the Owner and transported by the Owner.

Should the initial treatment result in an unsatisfactory bacteriological test or should corrective work be required because of testing, then the chlorination procedure shall be repeated by the Contractor at his own expense until satisfactory results are obtained. These repeat procedures shall follow Section 7-11.3(12) of the WSDOT Standard Specifications, as appropriate and as necessary for the addition of chlorine. The cost of disposal of water used for disinfection shall be borne by the Contractor.

***** END OF SECTION *****